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Adaptation of a Counseling Intervention to Address Multiple Cancer Risk Factors Among Overweight/Obese Latino Smokers

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Abstract

More than 60% of cancer-related deaths in the United States are attributable to tobacco use, poor nutrition, and physical inactivity, and these risk factors tend to cluster together. Thus, strategies for cancer risk reduction would benefit from addressing multiple health risk behaviors. We adapted an evidence-based intervention grounded in social cognitive theory and principles of motivational interviewing originally developed for smoking cessation to also address physical activity and fruit/vegetable consumption among Latinos exhibiting multiple health risk behaviors. Literature reviews, focus groups, expert consultation, pretesting, and pilot testing were used to inform adaptation decisions. We identified common mechanisms underlying change in smoking, physical activity, and diet used as treatment targets; identified practical models of patient-centered cross-cultural service provision; and identified that family preferences and support as particularly strong concerns among the priority population. Adaptations made to the original intervention are described. The current study is a practical example of how an intervention can be adapted to maximize relevance and acceptability and also maintain the core elements of the original evidence-based intervention. The intervention has significant potential to influence cancer prevention efforts among Latinos in the United States and is being evaluated in a sample of 400 Latino overweight/obese smokers.

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Keywords

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Smoking, poor diet, and insufficient physical activity (PA) account for more than 60% of all cancer-related deaths and 35% of all deaths in the United States (Mokdad, Marks, Stroup, & Gerberding, 2004; Ries et al., 2004). Quitting smoking decreases the risk of lung disease, various cancers, heart attack, and stroke (U.S. Department of Health & Human Services [USDHHS], 1990). Diets high in fruits and vegetables (F/V) protect against cancers of the oral cavity, pharynx, esophagus, pancreas, stomach, colorectal, and bladder (Block, Patterson, & Subar, 1992; Danaei, Vender Hoorn, Lopez, Murray, & Ezzati, 2005; Doll & Peto, 1981; Donaldson, 2004). Increased PA lowers the risk of colon and breast cancer (Colditz, Cannuscio, & Frazier, 1997; Friedenreich, Thune, Brinton, & Albanes, 1998; Shephard & Fitcher, 1997) and protects against heart disease, stroke, and type 2 diabetes (USDHHS, 2008). Smoking, poor diet, and low PA are linked (Chiolero, Wietlisbach, Ruffieux, Paccaud, & Cornuz, 2006; Kendzor et al., 2008) and together yield synergistically adverse effects on health (Freedman et al., 2006; Marrero et al., 2005). Thus, multiple-risk-behavior interventions could yield greater risk reduction relative to interventions targeting one behavior (Prochaska et al., 2004).

Although the prevalence of cigarette smoking is lower among Latinos than the general population (12.9% vs. 19%; Centers for Disease Control and Prevention [CDC], 2012), three of the four leading causes of death among Latinos are smoking related (i.e., cancer, heart disease, stroke; U.S. Cancer Statistics Working Group, 2005), similar to the general population. Seventy-five percent of Latinos do not meet the recommended levels of F/V consumption, and they have low rates of PA (CDC, 2007), which may contribute to overweight and obesity (Huang et al., 2003). Latino smokers disproportionately experience multiple health risk behaviors (Kendzor et al., 2008). Individual or community-based behavioral interventions targeting a single behavior among Latinos have been successful at reducing a target behavior (Mier, Ory, & Medina, 2010; Webb, Rodríguez-Esquivel, & Baker, 2010), and many were culturally tailored. However, few have targeted more than one behavior (as in Eakin et al., 2007), and no known published studies have simultaneously targeted smoking, diet, and PA among Latinos.

In response to this need, we report the adaptation of an evidence-based smoking cessation program to address two additional risk behaviors and make the program culturally appropriate. The program implementation protocol and counselor training materials were adapted so that counseling could address all three behaviors in a culturally relevant way.

Adapting an Evidence-Based Intervention

We adapted *Motivation and Problem Solving* (MAPS; Vidrine et al., 2013), a behavior change program that embeds empirically validated social-cognitive approaches within a motivational interviewing (MI; Miller & Rollnick, 2002) therapeutic approach. Three randomized controlled trials testing MAPS for smoking cessation showed positive results (McClure, Westbrook, Curry, & Wetter, 2005; Reitzel et al., 2010; Wetter et al., 2007). One

trial (Wetter et al., 2007) was the first to demonstrate that telephone-based counseling is effective at reaching and treating Spanish-speaking Latino smokers.

There are several benefits to adapting existing interventions such as MAPS. Culturally adapted and targeted interventions may yield greater benefits than those that are not (Griner & Smith, 2006). Culturally adapted interventions may be more appealing and increase adoption of the intervention (Castro, Barrera, & Martinez, 2004). Adaptation efforts reflect the ethical obligation for interventions to account for a client's cultural and contextual realities (American Psychological Association, 1993). Additionally, practitioners benefit from adaptation efforts because they typically require fewer resources and may be more promising since its precursor has already demonstrated efficacy. Effective adaptations stand to further the reach and relevance of the MAPS intervention, which in turn would have a positive influence on cancer prevention efforts.

Framework for Adaptation

The process described here is consistent with Resnicow and colleagues' framework for cultural sensitivity in health promotion and substance use programs (Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999; Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000). They argue that the need for cultural adaptation may arise when differences exist in prevalence rates of the target behavior, prevalence rates of risk factors, or predictors of the target behavior. We sought to adapt a program for both health promotion and substance use, and as described earlier, differences exist among Latinos in all the target areas. Thus, Resnicow's framework is highly appropriate here. The framework describes "surface structure" adaptations that enhance acceptability. In contrast, "deep structure" adaptations reflect specific attention to the unique factors that influence health outcomes. Resnicow et al. (2000) suggest techniques for adaptation, including literature review, surveys or focus groups, pretesting of materials, and pilot testing of the intervention. The purpose of these techniques is to compile existing data and gather new data regarding prevalence rates of the target behavior, prevalence rates of risk factors, or predictors of the target behavior. Data gathered in turn inform specific adaptations to the intervention. The current study followed this approach for the adaptation of MAPS and sought expert consultation and feedback from counselors trained in MAPS as additional sources of data.

Method

Literature Review

Because MAPS has been empirically validated to increase smoking cessation among Spanish-speaking Latinos, the adaptation process focused on diet, PA, and cultural considerations surrounding those behaviors. We conducted a review of the published literature with three goals: (a) identify psychosocial determinants of the target behaviors and assess the appropriateness of MAPS for influencing these determinants; (b) identify practical models of cultural sensitivity to incorporate into counselor training; and (c) identify culturally appropriate educational materials to be distributed to participants as part of the intervention. The first two goals informed deep structure adaptations, and the third goal informed surface structure adaptations.

Focus Groups

The authors also used focus groups to pretest potential program materials. Participants were asked to provide feedback on the acceptability, appeal, preference, and usefulness of materials, including educational handouts on the three health behaviors and potential elements of a “tool kit” to encourage PA. Focus group participants were also presented with a “values card” containing a list of common personal values. The values card used to identify important participant values, which are later referenced when building motivation for change. Thus, it is important that participants have a list of values with which they resonate. Participants were asked to select the three most important and three least important values and to name the values they felt were important but missing from the list.

Five focus groups were conducted in Spanish with smokers who self-identified of Mexican origin or descent and reported a height and weight consistent with a body mass index >25 . There were a total of 21 female and 9 male participants. Three groups were all-female and two were all-male, to increase participant similarity within each group (Bloor, Frankland, Thomas, & Robson, 2001; Krueger, 2009). Group sizes ranged from 4 to 8, and sessions lasted 70 to 107 minutes. Trained staff facilitated focus groups using a semistructured interview guide. The guide consisted of 40 items, including pretesting items, and is available on request from the authors. It included items such as “when you think of physical activity, what comes to mind?” and “what does good nutrition mean to you?” Sessions were audio-recorded, transcribed, and translated into English by a certified translator.

All focus group data, including pretesting data, underwent thematic analysis (Braun & Clarke, 2006). After an initial review, coders reread the transcripts and devised a set of codes to organize patterns of meaning from the data (Braun & Clarke, 2006; Tuckett, 2005). Each transcript was coded and reviewed by two coders. Coders sorted the codes into organized themes and refined them through discussion, then labeled each theme (Braun & Clarke, 2006).

Expert Consultation

Experts in motivation-based interventions for diet/nutrition, PA, and smoking were consulted (authors EGE and KR). Expert consultation focused on the training manual, study protocol, and structure of the intervention. This was an iterative process of feedback, revision, and review conducted primarily via written and telephone correspondence. MAPS-trained counselors provided feedback on the usefulness, feasibility, and impact of changes on counseling.

Pilot Testing

After incorporating any changes to the protocol informed by data-gathering techniques, the intervention was tested with 10 participants (five women and five men). Four MAPS-trained counselors participated in an average of three counseling sessions per participant over 3 months. Counselors provided additional feedback on the intervention and protocol based on pilot test findings.

Results and Adaptations

Literature Review

The extant literature supports the feasibility of incorporating PA and F/V consumption into MAPS because the same counseling methods used in MAPS most likely influence the major determinants of these behaviors. MAPS is hypothesized to affect smoking cessation by increasing motivation and self-efficacy and reducing negative affect (Vidrine et al., 2013). MAPS increases motivation by applying MI techniques and exercises for enhancing motivation. Cognitive-behavioral skills such as providing reinforcement for change efforts and problem solving enhances self-efficacy. Similarly, cognitive-behavioral skills training decreases negative affect (Vidrine et al., 2013).

Research demonstrates that motivation, self-efficacy, and negative affect are important mechanisms of change in PA and F/V consumption. For example, social-cognitive theory has been applied to behavior change interventions targeting PA (Gyurcsik, Brawley, Spink, & Sessford, 2013; Kelly, Melnyk, & Belyea, 2012) and diet/nutrition (Anderson, Winett, Wojcik, Winett, & Bowden, 2001; Kelly et al., 2012). Self-efficacy is a good predictor of PA (Dutton et al., 2009; Edmunds, Ntoumanis, & Duda, 2007; Gyurcsik et al., 2013; Kaewthummanukul & Brown, 2006; Koring et al., 2012; Sharma, Sargent, & Stacy, 2005), and predicts F/V consumption (Brug, Lechner, & De Vries, 1995; Kreausukon, Gellert, Lippke, & Schwarzer, 2012; Mainvil, Lawson, Horwath, McKenzie, & Reeder, 2009; Strachan & Brawley, 2009). Although research is scarce, negative affect (Payne, Steck, George, & Steffens, 2012; Pickett, Yardley, & Kendrick, 2012) and autonomous motivation appear to relate positively to behavior change. Therefore, the literature review supports the hypothesis that methods used in MAPS could be appropriate for addressing F/V consumption and PA.

Practical Models of Cultural Sensitivity—Two practical frameworks were selected to enhance counselors' cultural sensitivity in their interactions with participants. The first is Hays's (2001) ADDRESSING framework. This is a method for structured self-exploration of how patients' and providers' cultural backgrounds interact to affect the counseling relationship. It focuses on areas of cultural difference where the counselor is a member of a privileged group and may be less aware of the experiences of the nonprivileged group. The framework encourages nonjudgmental awareness of one's stereotypes and biases that may affect service provision. The second is Betancourt's (Carrillo, Green, & Betancourt, 1999) practical framework for cross-cultural communication. It provides practical tasks and skills that promote effective communication with participants that may be useful where cultural differences exist and affect the counseling relationship. Counselors received education in these two frameworks, and information, practical exercises, and examples for use of the framework were added to the protocol. In addition, counselors participated in a 2-hour seminar reviewing these frameworks and discussing personal and case examples that applied these frameworks.

Educational Materials—Extensive searches yielded a variety of existing health education materials for smoking, PA, and F/V consumption for Spanish-speaking populations. Project

staff collected and evaluated the materials for content and relevance to the current study. Materials chosen addressed the specific knowledge gaps and barriers associated with smoking, PA, and F/V consumption that surfaced through the literature review and focus groups.

Focus Group Findings

Physical Activity—PA-related themes identified revolved around barriers to participating in regular PA. We noted that several skills for addressing these barriers are already present in MAPS (e.g., problem solving/skills training for increasing social support, motivation, time management). The remaining themes had been also noted from counselor feedback (e.g., counselors requested additional training in counseling people in PA who have existing health problems or pain).

Fruit/Vegetable Consumption—Participants agreed that increasing F/V consumption was important, but reported many barriers when trying to integrate F/V into their diet. These included F/V perishability, cost, children's dislike of F/V, partners' preference for other foods, personal preferences, lack of knowledge about preparing F/V, and lack of time.

Informational modules to help counselors address these concerns were added to the manual and discussed in training. For example, participants' concerns that F/V can be expensive and spoil quickly can be addressed by including practical tips. These tips included buying F/V in less perishable forms (e.g., frozen, dried), using more perishable produce earlier in the week, strategies for finding sale items, and buying F/V in bulk, then freezing half for later use.

Participants also indicated that children often dislike the F/V that parents buy and resist eating F/V and the healthy meals. To help counselors address these concerns, informational modules were added that included strategies for involving children in cooking and F/V shopping (e.g., having children select F/V, go on a scavenger hunt for F/V at the grocery store).

Many participants noted that personal and spousal meal preferences and demands heavily dictated the kinds of food that are prepared and that household meals are heavy in starches and protein and lacking in F/V. Some participants attempted to incorporate F/V into their meals, but felt constrained by their own or other family members' cooking abilities and food preferences. Finally, a few participants discussed challenges associated with finding time to prepare healthy meals and the fatigue they felt in the evenings. To help counselors address these concerns, informational modules were added that include basic cooking strategies for novice cooks, tips for incorporating F/V in ways that minimally affect appearance and taste of food, and strategies for incorporating F/V for "on-the-go" meals and snacks.

Pretesting of Materials

Written Materials—Participants expressed a strong preference for materials that featured many illustrations/photographs and presented ample practical information (i.e., "how to's") for behavior change. Participants did not find appealing the "fotonovela," stating that it is for "older people." Materials that participants found appealing were included as health education materials for intervention study participants. These included: *¿Cuántas frutas y*

verduras necesitas tú? (How many fruits and vegetables do you need? CDC, n.d.) and *¡Manténgase activo y Siéntase Bien!* (Stay active and feel good! National Heart Lung and Blood Institute, 1996).

Exercise Materials—Participants expressed familiarity with exercise toolkit materials, recognized and understood the purpose of a pedometer, and expressed a preference for a “sturdy” pedometer with an attached clip. Participants overwhelmingly expressed preference for a water bottle, T-shirt, gym bag, and pedometer as part of the toolkit. Participants expressed interest in a baseball cap, though to a lesser extent. A Frisbee and jump rope were considerably less appealing than all other materials. When asked if anything was missing that the participants would like in a toolkit, participants mentioned small weights, exercise equipment, a workout DVD (particularly, “something for dancing”), and sneaker shoes. Last, members of two focus groups expressed a preference for bright colors. Shoes were not considered further for inclusion due to the impracticality of distribution, and T-shirts were not considered further due to lower usefulness compared with the other items. Weights were also impractical for distribution; however, resistance bands were considered. The final toolkit comprised a red water bottle, a beige and purple baseball cap, a black pedometer with clip, and a black and red duffel bag. Intervention study participants will also choose of one of the following items: a soccer ball, Zumba DVD, exercise ball, or resistance bands.

Values Clarification—Among women, the most important values were being a good mother and “doing God’s will.” “Being responsible,” “respecting others,” “being spiritual,” and “family” were also important. The least important values for women were “being young” and “being attractive.” Among men, the most important values were “being responsible,” “being a good spouse,” “being a good father,” and “family.” The least important values were “being athletic” and “being young.”

Some participants noted confusion over the value “in control,” believing it referred to control over others, which was viewed negatively. Thus, the phrasing of this value was changed to “in control of oneself.”

Additional values suggested by participants that were not on the values card included “love oneself,” “well-being,” “making decisions,” “punctuality,” “knowing how to do things,” and “being valued.” Of these, “well-being” was the most frequently mentioned. Thus, “well-being” was added to the values card.

Expert Consultation

Consultation with experts resulted in a number of changes to the structure and delivery of MAPS and counselor record keeping. Four main issues were addressed through expert consultation. First, counseling sessions were increased from 12 to 18 to accommodate F/V consumption and PA. Second, consistent with autonomy support inherent in MI, participants chose the order in which to address the three target behaviors in counseling. Third, the “call content checklist” was developed to track session content (adapted from Eakin et al., 2010). Counselors check off tasks completed in relation to each behavior after each session. The checklists help ensure the counselors discuss all three behaviors with participants and provide a detailed picture of how each session addresses each behavior. Fourth, problem-

solving strategies and educational content for counselor use with participants specific to F/V consumption and PA were added to the counseling manual.

Consultation with study counselors confirmed an anticipated need for additional psychoeducation and training strategies for increasing F/V consumption and PA. Training included 8 hours of face-to-face training with two members of MD Anderson Cancer Center's Office of Employee Wellness and a research nutritionist/counselor supervised by author KBE. Study counselors also completed four webinars available from the American College of Sports Medicine. Table 1 outlines the topics covered in these trainings.

Pilot Testing

Pilot testing revealed no major problems or concerns with the implementation of the adapted intervention. Counselor feedback resulted in minor changes in formatting to simplify record keeping.

Discussion

The current study used a practical framework (Resnicow et al., 2000) to adapt an existing intervention for smoking cessation to additionally address F/V consumption and PA among overweight/obese Latino smokers. Literature review supported that many social-cognitive determinants were consistent across smoking, F/V consumption, and PA. Thus, MAPS may be a promising approach for addressing multiple health risk behaviors, and no changes were made to the core elements of MAPS. However, deep structure changes were made to the content, and the implementation protocol (manual and training) to address additional behaviors and issues relevant to the priority population. For example, counselor training now includes specific attention to cultural awareness, cross-cultural communication, nutrition, and PA.

Focus groups were extremely valuable for identifying preferences and concerns of the priority population, which in turn informed deep structure adaptations. The themes defined were, fundamentally, specific examples of the broader intervention targets of motivation and self-efficacy, and thus are appropriately addressed with MAPS. Participants' F/V consumption was strongly tied to their spouses' and children's consumption. This is consistent with research on a variety of health outcomes that demonstrate the influence of *familism* (Gallo, Penedo, de los Monteros, & Arguelles, 2009). The holistic approach of MAPS already allows for discussion of familial factors if they arise (Vidrine et al., 2013). However, focus group results clearly indicated the need for the training manual to give specific attention to involving family in changing F/V consumption.

Useful surface structure adaptations were also made. For example, the literature review produced participant educational materials that reflect characteristics of the target population (e.g., Spanish-language materials, images of Latinos). Pretesting confirmed the acceptability of the materials.

There are some limitations to the study. First, although the protocol was pilot tested with 10 participants, feedback from this process came only from the counselors and was thus a

missed opportunity to gain additional insights from the participants' perspectives. Second, although the literature was conducted with three clear goals in mind, the literature review conducted was not a systematic review. Third, it is not empirically known if access to each element in the toolkit encourages PA. However, we do anticipate that receiving equipment chosen by members of the target population will not only increase the odds of use but also add appeal and acceptability to the overall intervention. Last, although the current study focuses on a very specific population, Mexican origin or descent and Spanish-preferred or Spanish-only speakers, such individuals may have different needs compared with bilingual or English-only-speaking Mexican Americans, possibly due to differences in sociocultural contexts. As such, these findings may not generalize to other populations of Mexican Americans.

In sum, we provide an example of an adaptation approach consisting of identification of the core elements of an existing program (key determinants and theoretically derived methods to address them; Bartholomew, Parcel, Kok, Gottlieb, & Fernández, 2011; Michie et al., 2005), evaluation and comparison of behaviors, determinants, and contextual issues in the new target population (through literature review and new data gathered), considerations of both the deep structure and surface structure when deciding on potential modifications, and implementation of changes while maintaining the programs core elements (processes of change, methods, delivery). The training content was expanded considerably to accommodate new intervention targets and the priority population, but MAPS's foundation in social-cognitive theory and MI-consistent approach to program delivery remains, as data indicated these elements are relevant to the intervention targets and priority population. The adapted intervention will be tested against a health education condition among 400 Latino overweight/obese smokers. Results of the trial can potentially affect cancer prevention efforts among this understudied population.

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Table 1

Summary of Training in Nutrition and Physical Activity.

Description of training	Topics covered
Basics of nutrition and physical activity (nutritionist and fitness expert) of the Wellness Team at MDACC <ul style="list-style-type: none"> 4-Hour training Facilitators: 1 nutritionist and 1 fitness expert from the Office of Employee Wellness at MDACC 	<ul style="list-style-type: none"> What are carbohydrates, proteins, fats, sugars? Fruit and vegetable portion sizes Diabetes, high blood pressure, and diet What is a well-balanced meal? Traditional Mexican staple foods and how to substitute or cook them in a healthier way What is moderate intensity exercise? Basics of cardio and strength training How to get started with exercise
Behavior change in diet and physical activity <ul style="list-style-type: none"> 4-Hour training Facilitators: 1 research staff nutritionist and 1 research staff counselor 	<ul style="list-style-type: none"> How to motivate people to get started with exercise Exercise recommendations and modifications for individuals with injuries, pain, or overweight Nutrition, physical activity and cancer risk
Online Webinars through the American Academy of Sports Medicine	<ul style="list-style-type: none"> Fundamentals of exercise science Injuries, special populations, and behavior change Obesity assessment and nutrition Nutrition, obesity, and weight management

Note. MDACC = MD Anderson Cancer Center.